

Rec'd PCT/PTO 03 DEC 2004

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WIP6 PCT

**PATENT COOPERATION TREATY  
PCT  
INTERNATIONAL PRELIMINARY EXAMINATION REPORT**

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>FP17887</b>	<b>FOR FURTHER ACTION</b>	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416).
International Application No. <b>PCT/AU2003/000700</b>	International Filing Date (day/month/year) <b>5 June 2003</b>	Priority Date (day/month/year) <b>6 June 2002</b>
International Patent Classification (IPC) or national classification and IPC <b>Int. Cl. <sup>7</sup> G01R 29/10</b>		
Applicant <b>INTERACTIVE COMMUNICATION SOLUTIONS PTY LTD et al</b>		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of **7** sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of  sheet(s).

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☒ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand <b>19 December 2003</b>	Date of completion of the report <b>16 September 2004</b>
Name and mailing address of the IPEA/AU <b>AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaaustralia.gov.au Facsimile No. (02) 6285 3929</b>	Authorized Officer  <b>Richard Reed for DEREK BARNES</b> Telephone No. (02) 6283 2198

**I. Basis of the report****1. With regard to the elements of the international application:\***

- ☒ the international application as originally filed.
- ☐ the description, pages , as originally filed,  
pages , filed with the demand,  
pages , received on with the letter of
- ☐ the claims, pages , as originally filed,  
pages , as amended (together with any statement) under Article 19,  
pages , filed with the demand,  
pages , received on with the letter of
- ☐ the drawings, pages , as originally filed,  
pages , filed with the demand,  
pages , received on with the letter of
- ☐ the sequence listing part of the description:  
pages , as originally filed  
pages , filed with the demand  
pages , received on with the letter of

**2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.**

These elements were available or furnished to this Authority in the following language which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

**3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:**

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

**4. ☐ The amendments have resulted in the cancellation of:**

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/fig.

**5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\***

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report

**IV. Lack of unity of invention**

1. In response to the invitation to restrict or pay additional fees the applicant has:

- ☐ restricted the claims.
- ☐ paid additional fees.
- ☐ paid additional fees under protest.
- ☐ neither restricted nor paid additional fees.

2. ☒ This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is

- ☐ complied with.
- ☒ not complied with for the following reasons:

See Supplemental Sheet.

4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:

- ☐ all parts.
- ☐ the parts relating to claims Nos.

**Supplemental Box**

(To be used when the space in any of the preceding boxes is not sufficient)

**Continuation of BOX IV****Lack of Unity**

The international application does not comply with the requirements of unity of invention because it does not relate to one invention or to a group of inventions so linked as to form a single general inventive concept. In coming to this conclusion the International Preliminary Examining Authority has found that there are different inventions as follows:

1. Claims 1-22 are directed to a method of determining near field radiation characteristics of a radiating device from a model which approximates determined far field characteristics of the device. It is considered that this feature comprises a first special technical feature.
2. Claims 23-27 are directed to a method of estimating radiation power density level by summing the contributions of many point sources representing the radiating device. It is considered that this feature comprises a second special technical feature.
3. Claims 28-34 are directed to a method of calculating power density level at a point in space from, the far field radiation characteristics of a radiating device, the boundary between the far and near field radiation and the displacement of a point in space relative to the closest point on the radiating device. It is considered that this combination of features comprises a third special technical feature.

Since the abovementioned groups of claims do not share any of the technical features identified, a "technical relationship" between the inventions, as defined in PCT rule 13.2 does not exist. Accordingly the international application does not relate to one invention or to a single inventive concept, a priori.

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Claims 1-34	YES
	Claims -	NO
Inventive step (IS)	Claims -	YES
	Claims 1-34	NO
Industrial applicability (IA)	Claims 1-34	YES
	Claims -	NO

**2. Citations and explanations (Rule 70.7)**

**CITATIONS**

D1: US 3879733 A (HANSEN et al) 22 April 1975  
D2: CA 2033375 A (HAZELTINE CORPORATION) 3 April 1992  
D3: US 5119105 A (NGAI et al) 2 June 1992  
D4: WO 1993/011581 A1 (ALLIED-SIGNAL, INC.) 10 June 1993  
D5: US 5394157 A (GARNESKI) 28 February 1995  
D6: US 5477229 A (CAILLE et al) 19 December 1995

**NOVELTY (N)**

**Claims 1-22:** None of the citations listed in the International Search Report (ISR) disclose a method of determining near field radiation characteristics of a radiating device from a model which approximates determined far field radiation characteristics for the radiating device. Therefore claim 1, and its appended claims 2-22, which define these features, are novel.

**Claims 23-27:** None of the citations listed in the ISR disclose, representing the radiation device as a plurality of point sources, estimating power density level at a plurality of positions in space for each point source, and determining the total power density by summing the contribution of each point source. Therefore claim 23, and its appended claims 24-27, which define these features are novel.

**Claims 28-34:** None of the citations listed in the ISR disclose, determining far field radiation characteristics, determining the boundary between near and far field radiation, determining the displacement of a point in space relative to the radiating device and calculating the power density level at the point in space. Therefore claim 28, and its appended claims 29-34 are novel.

**INVENTIVE STEP (IS)**

**Claims 1-22:** Each of the citations in the ISR disclose a method of determining far field radiation characteristics from a model which approximates determined near field radiation characteristics for a radiating device. Therefore given the problem of trying to obtain the near field characteristics of a radiating device from determined far field characteristics, and given any of the citations D1-D6, it would have been obvious for the person skilled in the art to try using a model which approximates the determined far field characteristics and to determine the near field radiation characteristic from the model. Therefore claim 1 does not involve an inventive step when compared to any of citations D1-D6.

None of claims 2-22 appear to add matter which involves an inventive step as the added features are either common general knowledge or are obvious additions.

(continued on supplementary sheet)

**Supplemental Box**

(To be used when the space in any of the preceding boxes is not sufficient)

**Continuation of BOX V**

**Claims 23-27:** It is common general knowledge (CGK) in the art of antennas and electromagnetic fields, that a radiating object can be represented as a plurality of point sources which radiate electromagnetic radiation, and that various values such as electromagnetic field, power density, etc can be calculated by summing all the contributions from each of the notional point sources. Therefore claim 23 does not involve an inventive step when compared to the CGK in the art. Claims 24-27 do not appear to add any features which involve an inventive step as they appear to add matter which is either CGK in the art or an obvious addition.

**Claims 28-34:** Claim 28 is not clear as to what is used to calculate the power density level at the point in space (see Part VIII). The CGK in the art includes knowledge that power density levels at a point can be calculated from known values, location of the point with respect to the known values, models of near field and far field radiation, the location of the near field and far field radiation with respect to the point, etc.

Therefore given the problem of trying to obtain the power density level at a point in space, and given the CGK in the art of antennas and radiating objects, it would have been obvious to the person skilled in the art that the various things defined in this claim should be used to calculate the power density level at a point in space. Therefore claim 1 does not involve an inventive step when compared to the CGK in the art.

None of claims 29-34 appear to add matter which involves an inventive step as the added features are either common general knowledge or are obvious additions.

**INDUSTRIAL APPLICABILITY (IA)**

Claims 1-34 are clearly applicable to the communication and environmental safety industries and are therefore industrially applicable.

**VIII. Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

Claim 28 lacks clarity because:

A) it is not fully clear what the passage "the displacement of a point in space relative to the closest point on the radiating device" means.

B) it is not clear from the claim what is used to calculate the power density level at the point in space. The claim simply defines, determining far field radiation characteristics, determining the boundary between near and far field, and determining the displacement of a point in space, but doesn't define the way these things are used to calculate the power density level or indeed if any of them are used to calculate the power density level.

Claim 34 lacks clarity as it is appended to itself.

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